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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,849	11/25/2003	Michael John Padgett	771.011	9685

7590

07/15/2004

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EXAMINER

PHAN, THAI Q

ART UNIT

PAPER NUMBER

2128

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/723,849	Applicant(s) PADGETT, MICHAEL JOHN	
	Examiner Thai Q. Phan	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to patent application S/N: 10/723,849, filed on 11/25/2003. Claims 1-21 are now pending in the Action.

Drawings

The informal drawings are acceptable for examination. Formal drawings will be required when application is in condition for allowance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Carrazzone et al, US patent no. 5,583,825, issued on Dec. 10, 1996.

As per claim 1, Carrazzone anticipates a method and system for deriving reservoir lithology and fluid content from pre-stack inversion of seismic data very identical to the claimed invention (col. 3, lines 10-50). According to Carrazzone, the method includes steps:

merging an attribute file with attribute values with a second horizon file, wherein the second horizon file is a member of the group consisting of a time file with time values and a depth file with depth values, wherein merging the attribute file with the second horizon file forms a merged file (Fig. 3, col. 8, lines 25-47);

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identifying an area of interest of the merged file forming an identified area file (col. 30, line 40 to col. 31, line 18, for instance);

identifying a time range for a time horizon file or a depth range for a depth horizon file over which to perform analyses on the identified area file (;

proposing a theory that the identified area has at least a portion that is contiguous between a hydrocarbon area and a water-bearing area (col. 39, lines 34-67, for example);

binning the identified area of interest using a file with a first value, wherein the first value comprises time values and depth values, wherein binning the merged file with the first value forms a plurality of bins in specified increments (col. 5, lines 24-26, col. 10, lines 59-62, col. 13, lines 1-15, col. 13, line 30 to col. 14, line 57, for example) ;

computing a calculated value for each bin forming a computed value, for at least one member of the group comprising:

an average of attribute values within the bin;

an average absolute value of the attribute values within the bin;

a standard deviation for the attribute values within the bin;

a maximum of the attribute value within the bin; a minimum of the attribute value within the bin; a range of attribute values within the bin; a range of attribute absolute values within the bin; a median for the attribute value within the bin; a mode for the attribute values within the bin; a skewness for the attribute values within the bin;

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a plurality of defined moments for attribute values within the bin (col. 16, lines 1-32, col. 18, line 51 to col. 25, line 67, for example); and combinations thereof;

creating a plot by plotting the computed value relative to the first value for each bin; viewing the plot to ascertain if a discontinuity would correspond to a fluid contact; using a discontinuity with a water reservoir model and at least one hydrocarbon reservoir model to confirm the theory; and using the discontinuity to determine a boundary between the water reservoir model and the hydrocarbon reservoir model and the corresponding water reservoir and the corresponding hydrocarbon reservoir for an identified area (Figs. 4-6, col. 5, lines 8-13, col. 29, line 30 to col. 38, line 33, for example).

As per claim 2, Carrazzone anticipates merging of the attribute file and the second horizon file is performed using geographic coordinates comprising:

X-Y prospect coordinate system;

X-Y field development system;

latitude and longitude (Fig. 1, cols. 18, 26, 33-34);

internal 3D seismic survey coordinates; and combinations thereof.

As per claim 3, Carrazzone discloses the area of interest is identified using coordinates of a set of closed polygons for 3D seismic survey modeling (Fig. 1, block (110), col. 10, lines 9-40).

As per claim 4, Carrazzone anticipates the area of interest is identified using a set of closed polygons.

As per claim 5, Carrazzone anticipates the identified area of interest is the geographic intersection of the area of interest and the merged file.

As per claim 6, Carrazzone discloses the time horizon file is a set of two-way seismic time values depicting the seismic travel time from the datum to the horizon of interest and back to a datum (col. 18, line 51 to col. 19, line 9, for example).

As per claim 7, Carrazzone anticipates the depth horizon file is a set of values that depict the depth from a datum to the horizon of interest (see above).

As per claim 8, Carrazzone anticipates the attribute file is at least one member of the group comprising:

- a set of compiled seismic reflection data, processed using a defined attribute generating algorithm and extracted for a horizon of interest,

- a set of compiled seismic reflection data processed using a defined attribute generating algorithm in conjunction with a horizon of interest,

- a set of compiled seismic velocity data processed using a defined attribute generating algorithm and extracted for a horizon of interest;

- a set of compiled seismic velocity data processed using a defined attribute generating algorithm in conjunction with a horizon of interest',

- a set of geophysical gravity data extracted for a horizon of interest;
- a set of geophysical gravity data compiled for a horizon of interest;

- a set of geophysical gravity data collected for a horizon of interest;

- a set of geophysical remote sensing data extracted for a horizon of interest;
- a set of geophysical remote sensing data compiled for a horizon of interest;

a set of geophysical gravity data collected for a horizon of interest;

a set of compiled geologic measurements for a horizon of interest',

a set of collected geologic measurements for a horizon of interest;

a set of petro-physical measurements for a horizon of interest;

a set of compiled or collected engineering data for a horizon of interest', and combinations thereof (see rejection above for limitation references).

As per claim 9, Carrazzone anticipates the area of interest is selected from the group consisting of a geographic area for a hydrocarbon reservoir, a geographic area for a water reservoir, a contiguous hydrocarbon and water reservoir, and combinations thereof (col. 5, lines 8-13, col. 6, lines 26-31).

As per claim 10, Carrazzone anticipates the specified increments range inherently from about 1 foot to about 500 feet, for seismic survey and calibration.

As per claim 11, Carrazzone anticipates the specified increments range from a specific value inherently including claimed 1 millisecond to about 100 milliseconds because the desire time interval is selected to survey seismic data and data calibration process.

As per claim 12, Carrazzone anticipates hydrocarbon reservoir interfaces with the water reservoir at the greatest extent of hydrocarbon saturation in a down structure direction.

As per claim 13, Carrazzone anticipates the hydrocarbon reservoir interfaces with the water reservoir at a discontinuity in hydrocarbon saturation.

As per claim 14, Carrazzone anticipates the proposed theory recites that an interface is located at a position comprising:

- a single depth;
- a single two way seismic travel time ; and
- combinations thereof.

As per claim 15. The method of claim 3, wherein the area of interest is the interior of the closed polygon.

As per claim 16. The method of claim 3, wherein the closed polygon is defined using geographic coordinates comprising:

- X-Y prospect coordinate system;
- X-Y field development system;
- latitude and longitude;
- internal 3D seismic survey coordinates; and
- combinations thereof.

As per claim 17, Carrazzone anticipates the area of interest is the union of the interiors of the closed polygons.

As per claim 18, Carrazzone discloses the closed polygon is defined using geographic coordinates comprising:

- X-Y prospect coordinate system;
- X-Y field development system;
- latitude and longitude;
- internal 3D seismic survey coordinates; and

combinations thereof (see rejection above for limitations referencing).

As per claim 19, Carrazzone discloses the geographic intersection is created by constructing a field of sets taken from the merged file, wherein the field of sets comprise a geographical location G, attribute at geographical location G, horizon time value at geographic location G, and horizon depth value at geographic location G; and, wherein all such geographic locations G are within the area of interest.

As per claim 20, Carrazzone anticipates the datum is the reference elevation from which travel times in a seismic dataset time file is measured.

As per claim 21, Carrazzone anticipates the datum is the reference elevation from which depths for a horizon of interest are measured.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US patent no. 5,430,689, issued to Rigsby et al, on July 1995
2. US patent no. 5,930,730, issued to Marfurt et al, on July 1999
3. US patent no. 6,131,071, issued to Partyka et al, on Oct. 2000
4. US patent no. 6,292,754 B1, issued to Thomsen, Leon, on Sept. 2001
5. US patent no. 6,463,387 B1, issued to Runnestrand et al, on Oct. 2002
6. US RE38,229 E, issued to Marfurt et al, on Aug. 2003

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thai Q. Phan whose telephone number is 703-305-3812.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 703-305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 08, 2004



Thai Phan
Patent Examiner
Art Unit: 2128